Patent

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appellants:	ANN XIAOAN LIU, et al.	Examiner:	M. Jackson
Serial No.:	09/235,686	Group Art Unit:	1773
For:	Synthetic Resin Film for Laminates and Method of Producing Same	Docket No.:	ACO 6105 PDUS
		Filing Date:	January 22, 1999

Hon. Commissioner of Patents and Trademarks
Washington, D.C. 20231

BRIEF ON APPEAL

CERTIFICATE OF MAILING

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on **January 29, 2002**

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Respectfully submitted,

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APPEAL BRIEF

I. INTRODUCTION

Pursuant to the provisions of 35 U.S.C. §134 and 37 C.F.R. §§1.191 and 1.192, this paper is submitted as a brief setting forth the authorities and arguments upon which Appellant relies in support of the Appeal from the Final Rejection of claims 1-9, 11, 12, 16, 20-22, 26-29, 33-35, and 39-61 dated July 30, 2001.

II. REAL PARTY IN INTEREST

The real party in interest in the present case is the assignee, Akzo Nobel N.V.

III. RELATED APPEALS AND INTEREFERENCES

Upon information and belief the appellant/assignee and appellant's/assignee's representative know of no pending or anticipated appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

IV. STATUS OF THE CLAIMS

The present application was originally filed with claims 1-38. In the Amendment filed November 8, 2000 in response to the Office Action of August 7, 2000, claims 1-9, 11, 12, 16, 20-22, 26-29, and 33-35 were amended, new claims 39-61 were added to the application, and claims 10, 13, 14, 15, 17, 18, 19, 23, 24, 25, 30, 31, 32, 36, 37, 38 were cancelled without prejudice. In the Amendment filed May 14, 2001 in response to the Office Action of February 14, 2001, claims 6 and 22 were amended. Thus, claims 1-9, 11, 12, 16, 20-22, 26-29, 33-35, and 39-61 are currently pending in this application and stand herein on Appeal.

V. STATUS OF THE AMENDMENTS

No amendments to the claims were made subsequent to final rejection.

VI. SUMMARY OF THE INVENTION

The invention relates to synthetic resin film for laminates having improved scratch resistance, methods of producing the same, a process for producing laminates from the film and laminates made thereby. Pages 1, lines 6-7, and 4, lines 12-27, of the specification. According to the invention, the synthetic resin film comprises a substrate impregnated with a resin composition comprising a thermosetting resin and a low profile additive. Page 4, lines 12-27, of the specification.

It has been found by the present inventors that the low profile additive significantly and surprisingly increases the scratch resistance of the resulting synthetic resin film. See, for example, page 5, lines 4-7, and Tables 1 and 2, respectively on pages 9 and 11 of the specification. The scratch resistance was tested as the ability of the laminate to resist a scratch from a weighted diamond point applied at varying amounts of force measured in Newtons. Page 8, lines 15-30, of the specification. In accordance with the invention, examples of the low profile additive include additives having a "low profile", such as microspheres, including ceramic microspheres and

powders, including thermoplastic polymer powders, such as polyethylene powder. See the paragraph bridging pages 5-6 of the specification.

Further, according to one aspect of the invention, the substrate of the synthetic resin film is twice impregnated with a resin composition containing a low profile additive. Pages 5, lines 26-28, 7, lines 21-29, and 8, lines 1-14, of the specification.

VII. ISSUES

There are two issues to be resolved herein on Appeal:

1. Is the rejection of claims 1-9, 11, 12, 16, 20-22, 26-29, 33-35, and 39-61 under 35 U.S.C. §103(a) as allegedly being unpatentable over Albrinck in view of Takahashi and further in view of allegedly admitted prior art in error?

2. Is the rejection of claims 1-9, 11, 12, 16, 20-22, 26-29, 33-35, and 39-61 under 35 U.S.C. §103(a) as allegedly being unpatentable over Albrinck in view of 3M and Zeelan Industries, Inc. Microspheres (3M and Zeelan) and further in view of allegedly admitted prior art in error?

VIII. GROUPING OF CLAIMS

Appellants respectfully submit that claims 1-9, 11, 12, 16, 20-22, 26-29, 33-35, and 39-61 do not stand and fall together, as explained in the following argument presented by Appellants.

IX. ARGUMENT

ISSUE 1

The rejection of claims 1-9, 11, 12, 16, 20-22, 26-29, 33-35, and 39-61 under 35 U.S.C. §103(a) as allegedly being unpatentable over Albrinck in view of Takahashi and further in view of allegedly admitted prior art is in error.

SPECIFICATION OF ERRORS OF THE REJECTION

The rejection is in error at least because Takahashi teaches away from the impregnation of a substrate with resin including either a low profile additive, ceramic microspheres, thermoplastic polymer powder, or polyethylene powder and, thus, teaches away from the claimed invention and its combination with Albrinck. Furthermore, if a prima facie case of obviousness had been established, it is rebutted by the unexpected results realized by the claimed invention.

Albrink is cited for disclosing a method of producing a decorative laminate by "impregnating a decorative alpha-cellulose paper with a coating formulation comprising melamine-formaldehyde resin with abrasion resistant particles", which are "preferably alumina." Final Action dated July 30, 2001 (Final Action) page 2. The Examiner admits that Albrinck does not disclose that the abrasion resistant particles (alumina) are substantially spherical or that they are microspheres. Final Action page 4.

Takahashi is cited for disclosing an abrasion resistant coating including spherical particles. Id. The Examiner contends it is obvious to utilize Takahashi's spherical particles in Albrinck's composition for its improved abrasion resistance and reduced machine wear. Final Action page 5.

However, citation to Takahashi fails to establish a prima facie case of obviousness because Takahashi does not teach that its spherical particles impart improved abrasion resistance when included in an impregnating composition, as in Albrinck or the claimed invention. Takahashi requires an overcoat composition, not an impregnating composition, and a special relationship between the diameter of the particles and the thickness of the overcoating to realize its abrasion resistant properties. See, for example, the abstract, col. 1, l. 30-45, and col. 9, l. 14-29. Accordingly, Takahashi teaches away from including its spherical abrasion reistant particles in a coating which

is impregnated and, thus, teaches away from the claimed invention and from the proposed combination with Albrinck.

IT TEACHES AWAY FROM THE CLAIMED INVENTION

A rejection based on obviousness cannot be sustained where the cited reference teaches away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 220 USPQ 303 (Fed. Cir. 1983) and see the Manual of Patent Examining Procedure (MPEP) 2141.02.

Simply, Takahashi teaches away from the claimed invention because it requires that its composition of resin and spherical particles be used as an overcoat, while the composition in the claimed invention is impregnated. Amendment filed May 14, 2001, pages 4 and 5, in response to the Action of February 14, 2001. Indeed, Takahashi instructs the skilled artisan to avoid penetration by using a special transfer method in the event the substrate is made of a material into which the coating composition would otherwise penetrate. Col. 9, l. 14-29, especially l. 23-26. See the response filed September 28, 2001 in reply to the Final Action. Further, the critical relationship in Takahashi between the diameter of the particles and the thickness of the coating demonstrates the composition must be on the surface. Thus, Takahashi specifically teaches away from impregnating the composition in the substrate, as in the claimed invention.

Albrinck also requires impregnation. See the claims and col. 5, l. 63-col. 6, l. 13, and the disclosure of a "resin impregnated sheet" prior to application of an overcoat in col. 6, l. 14-15. Thus, Takahashi teaches away from the combination, since it only teaches that its spherical particles result in improvements when they are in a surface coating composition and, thus, the skilled artisan could not expect to realize the benefits if it were impregnated, as in Albrinck.

TAKAHASHI'S TEACHINGS CANNOT BE DISSECTED

The Examiner states that Takahashi is only relied on for teaching "the improvement in terms of abrasion resistance when spherical particles are utilized as opposed to irregularly shaped or non-spherical particles" and not for whether it is impregnated or not. Final Action page 9.

Takahashi "must be considered in its entirety, including disclosures that teach away from the claims." MPEP 2141.02 referencing *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 220 USPQ 303 (Fed. Cir. 1983). Accordingly, the Examiner cannot pick and chose portions of a reference's teaching and ignore critical aspects of the reference which do not support the rejection.

Also, it is submitted that the Examiner is mistaken in stating that Takahashi shows spherical particles are better than non-spherical particles. Instead, Takahashi compares its composition to a composition which also has spherical particles in order to explain the necessity of strictly controlling the relationship between the diameter of the particles and the coating's thickness. Col. 1, l. 30-45.

THE REJECTION OF CLAIMS 1-9, 11, 12, 16, 27-29, 33-35, 39, 46, 53 and 60 IS IN ERROR

Claims 1-9, 11, 12, 16, 27-29, 33-35, 39, 46, 53 and 60 include a second impregnation step. In contrast, Albrinck does not have a second impregnation step; it has an overcoating step following its impregnation step. Col. 6, l. 14-32. It is submitted that the claimed second impregnation step is not obvious based on Albrinck's overcoating step and this is not contradicted by the record. Takahashi does not alleviate this deficiency in Albrinck.

THE REJECTION OF CLAIMS 4 and 5 IS IN ERROR

Neither reference discloses the claimed thermoplastic polymer powder of claim 4 or the polyethylene powder of claim 5. The rejection includes no reason on the record alleging that these recitations are obvious. It is submitted that they are not. Additionally, polyethylene powder is not known to have any effect on scratch resistance. Thus, it is unexpected that the addition of polyethylene powder (a type of thermoplastic polymer powder) increases scratch resistance by about twice as much. This can be seen from table 2, page 11 of the specification, which shows that scratch resistance with polyethylene powder increased twice as much from 1.5 to 3 and increased by one and three quarters from 2 to 3.5.

The rejection is submitted to be in error for the reasons outlined above, as well as for the showing of unexpected results which was ignored by the Examiner when presented during the prosecution of this case (Amendment May 14, 2001, pages 6 and 7 in response to the Action of February 14, 2001) and is further discussed below with respect to issue 2.

ISSUE 2

The rejection of claims 1-9, 11, 12, 16, 20-22, 26-29, 33-35, and 39-61 under 35 U.S.C. §103(a) as allegedly being unpatentable over Albrinck in view of 3M and Zeelan Industries, Inc. Microspheres (3M and Zeelan) and further in view of allegedly admitted prior art is in error.

SPECIFICATION OF ERRORS OF THE REJECTION

The rejection is in error at least because of the unexpected existence and magnitude of scratch resistant properties of the claimed invention which rebut any possible prima facie case of obviousness.

To reiterate, Albrink is cited for disclosing a method of producing a decorative laminate by "impregnating a decorative alpha-cellulose paper with a coating formulation comprising melamine-formaldehyde resin with abrasion resistant particles", which are "preferably alumina." Final Action, page 2. The Examiner admits that Albrinck does not disclose that the abrasion resistant particles (alumina) are substantially spherical or that they are microspheres. Final Action page 4.

3M and Zeelan is relied on for disclosing ceramic microspheres. The Examiner contends it is obvious to utilize 3M and Zeelan's microspheres instead of Albrinck's abrasion resistant particles in Albrinck's invention because 3M and Zeelan teaches its ceramic microspheres impart abrasion resistance. Final Action pages 7-8.

However, 3M and Zeelan does not teach or suggest its microspheres could be used in a decorative laminate to improve scratch resistance (notwithstanding the Examiner's assertions to the contrary (Advisory Action page 4)). Accordingly, it is entirely unexpected that the claimed invention increases scratch resistance and that this increase is substantial.

UNEXPECTED RESULTS REBUT ANY PRIMA FACIE CASE OF OBVIOUSNESS

It is unexpected that the claimed invention improves scratch resistance and realizes such a high level of improvement.

3M and Zeelan does not teach or suggest that its microspheres could be used to improve scratch resistance (again, notwithstanding the Examiner's assertions to the contrary (Advisory Action page 4)). It does indicate that its microspheres could be used to improve abrasion resistance.

Abrasion resistance is very different from scratch resistance. The difference between abrasion resistance and scratch resistance is demonstrated by the different testing methods they use. Abrasion resistance refers to the overall wear that the surface

can take. It is, thus, tested by abrading the surface with sandpaper and determining how much of the surface is worn away. See, for example, Albrinck, col. 8, l. 52-62. On the other hand, scratch resistance relates to the ability of the surface of the laminate to withstand a hard, sharp instrument concentrated in one area of the surface. Albrinck uses glass to test scratch resistance, col. 7, l. 32-62, while the present applicants used diamond. See page 8 of the specification.

The difference is also demonstrated by the examples of record which show that irregularly shaped alumina, which is known to improve abrasion resistance (see Takahashi and Albrinck) has a negative effect or no effect at all on scratch resistance. See Table A on page 2 of the Rule 132 Declaration ("Declaration") submitted with the Amendment of November 8, 2000, in response to the Action of August 2000. (Copy attached for convenience).

3M and Zeelan does not teach or suggest that its microspheres could be used to improve scratch resistance. It is, thus, submitted that there is no reason based on the references to expect that spherical particles would increase scratch resistance, let alone increase it such a great amount, as shown when comparing the results in the Declaration to the results in the specification.

The examples shown in Table A of the Declaration demonstrate that the presence of a non-spherical additive either decreases or has no effect on scratch resistance, as compared with the absence of a non-spherical additive. In contrast, Table 1 on page 9 of the specification demonstrates that the presence of a spherical additive (ceramic microspheres) increases scratch resistance, as compared with the absence thereof. Furthermore, the average scratch resistance of 3.6 Newtons obtained with ceramic microspheres (average calculated using samples in Table 1) is much higher than the average scratch resistance of 2.5 Newtons obtained with a non-spherical additive (average calculated using the samples in Table A). These unexpected results were presented during prosecution, but, inexplicably, were not addressed in any Office

Action. See Amendment May 14, 2001, pages 6 and 7, responding to the Action of February 14, 2001.

The unexpected results achieved by the claimed invention effectively rebut any prima facie case of obviousness. It is, however, submitted that a prima facie case of obviousness has not been established because 3M and Zeelan do not teach or suggest that its ceramic microspheres could even be used in a composition for a decorative laminate, such as Albrinck's. Thus, there is no suggestion to modify Albrinck to utilize 3M and Zeelan's microspheres, as is required to establish a prima facie case of obviousness. Amendment May 14, 2001, pages 5 and 6, in response to the Action of February 14, 2001. This is supported by the cases cited by the Examiner, *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 21 USPQ2d 1941 (Fed. Cir. 1992). Advisory Action page 2 and Final Action page 8.

THE REJECTION OF CLAIMS 1-9, 11, 12, 16, 27-29, 33-35, 39, 46, 53 and 60 IS IN ERROR

Claims 1-9, 11, 12, 16, 27-29, 33-35, 39, 46, 53 and 60 include a second impregnation step. In contrast, Albrinck does not have second impregnation step; it has an overcoating step following its impregnation step. Col. 6, l. 14-32. It is submitted that the claimed second impregnation step is not obvious based on Albrinck's overcoating step and this is not contradicted by the record. This deficiency in Albrinck is not alleviated by 3M and Zeelan which does not even relate to laminates.

THE REJECTION OF CLAIMS 4 and 5 IS IN ERROR

Neither reference discloses the claimed thermoplastic polymer powder of claim 4 or the polyethylene powder of claim 5. The rejection includes no reason on the record alleging that these recitations are obvious. It is submitted that they are not. Additionally, polyethylene powder is not known to have any effect on scratch resistance. Thus, it is unexpected that the addition of polyethylene powder (a type of thermoplastic polymer

powder) increases scratch resistance by about twice as much. This can be seen from table 2, page 11 of the specification, which shows that scratch resistance with polyethylene powder increased twice as much from 1.5 to 3 and increased by one and three quarters from 2 to 3.5.

X. CONCLUSION

In view of the arguments presented hereinabove it is submitted that the rejections of claims 1-9, 11, 12, 16, 20-22, 26-29, 33-35, and 39-61 are in error. The Honorable Board is therefore respectfully requested to reverse the Examiner and pass all of the claims 1-9, 11, 12, 16, 20-22, 26-29, 33-35, and 39-61 to issue.

Respectfully submitted,

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Encl: Appendix with claims; Rule 132 Declaration

XI. APPENDIX

CLAIMS

1. A method of producing synthetic resin film for laminates, said synthetic resin film comprising a substrate impregnated with a thermosetting resin, said method comprising

(a) impregnating the substrate with a first thermosetting resin composition comprising a first uncured thermosetting resin and a low profile additive,

(b) drying the impregnated substrate of (a),

(c) impregnating the substrate of (b) with a second thermosetting resin composition comprising a second uncured thermosetting resin and a low profile additive, and

(d) drying the impregnated substrate of (c).

2. The method of claim 39, further comprising at least partially curing the first uncured thermosetting resin in the impregnated substrate.

3. The method of claim 39, wherein said low profile additive comprises ceramic microspheres.

4. The method of claim 39, wherein said low profile additive comprises thermoplastic polymer powder.

5. The method of claim 39, wherein said low profile additive comprises polyethylene powder.

6. The method of claim 39, wherein said first and second uncured thermosetting resin are each selected from the group consisting of melamine-formaldehyde, urea-formaldehyde, phenol-formaldehyde and mixtures thereof.

7. The method of claim 39, wherein the substrate is paper.

8. The method of claim 39, wherein the low profile additive is present in amounts sufficient to provide said synthetic resin film with a scratch resistance of at least about 2.5 Newtons.

9. Synthetic resin film for laminates produced by the method according to claim 1.

11. The method of claim 1, further comprising at least partially curing the second uncured thermosetting resin in the impregnated substrate.

12. The method of claim 1, wherein said first uncured thermosetting resin and said second uncured thermosetting resin are the same.

16. The method of claim 1, wherein said first uncured thermosetting resin and said second uncured thermosetting resin are independently selected from the group consisting of melamine-formaldehyde, urea-formaldehyde, phenol formaldehyde and mixtures thereof.

20. Synthetic resin film for laminates comprising a substrate impregnated with an at least partially cured thermosetting resin and ceramic microspheres.

21. Synthetic resin film of claim 20, wherein the substrate is paper.

22. Synthetic resin film of claim 20, wherein the thermosetting resin is selected from the group consisting of melamine-formaldehyde, urea-formaldehyde, phenol-formaldehyde and mixtures thereof.

26. Synthetic resin film of claim 20, wherein the ceramic microspheres are present in amounts sufficient to provide said synthetic resin film with a scratch resistance of at least about 2.5 Newtons.

27. A process of producing laminate, said process comprising assembling a plurality of layers of synthetic resin film at least one of said layers being the synthetic resin film of claim 9, and subjecting said assembly to heat and pressure sufficient to effect consolidation of said layers to produce a laminate.

28. The process of claim 27, wherein the heat necessary to effect consolidation is 230 to 340 degrees F and the pressure necessary to effect consolidation is 800 to 1600 psi.

29. The laminate produced by the process of claim 27.

33. A laminate comprising a synthetic resin film of claim 9 laminated to a base material.

34. The laminate of claim 33, wherein said base material comprises wood.

35. The laminate of claim 33, wherein said base material is selected from the group consisting of particle board, medium density fiber board and composite panel.

39. The method of claim 1, wherein the low profile additive is inert, substantially spherical and has a particle size in the range of about 5 to about 60 microns.

40. A method of producing synthetic resin film for laminates, said synthetic resin film comprising a substrate impregnated with a thermosetting resin, said method comprising
(a) impregnating the substrate with a thermosetting resin composition comprising an uncured thermosetting resin and ceramic microspheres; and
(b) drying the impregnated substrate of (a).

41. The method of claim 40, wherein the ceramic microspheres have a particle size in the range of about 5 to about 60 microns.

42. The method of claim 40, further comprising at least partially curing the uncured thermosetting resin in the impregnated substrate.

43. The method of claim 40, wherein said uncured thermosetting resin is selected from the group consisting of melamine-formaldehyde, urea-formaldehyde, phenol-formaldehyde and mixtures thereof.

44. The method of claim 40, wherein the substrate is paper.

45. The method of claim 40, wherein the ceramic microspheres are present in amounts sufficient to provide said synthetic resin film with a scratch resistance of at least about 2.5 Newtons.

46. The method of claim 40, further comprising (c) impregnating the substrate of (b) with a second thermosetting resin composition comprising a second uncured thermosetting resin and a low profile additive, and
(d) drying the impregnated substrate of (c).

47. Synthetic resin film for laminates produced by the method according to claim 40.

48. A method of producing synthetic resin film for laminates, said synthetic resin film comprising a substrate impregnated with a thermosetting resin, said method comprising
(a) impregnating the substrate with a thermosetting resin composition comprising an uncured thermosetting resin and ceramic microspheres; and
(b) drying the impregnated substrate of (a), the ceramic microspheres comprising about 0.5 to about 4.75% of the thermosetting resin after drying the impregnated substrate.

49. The method of claim 48, further comprising at least partially curing the uncured thermosetting resin in the impregnated substrate.

50. The method of claim 48, wherein said uncured thermosetting resin is selected from the group consisting of melamine-formaldehyde, urea-formaldehyde, phenol-formaldehyde and mixtures thereof.

51. The method of claim 48, wherein the substrate is paper.

52. The method of claim 48, wherein the ceramic microspheres are present in amounts sufficient to provide said synthetic resin film with a scratch resistance of at least about 2.5 Newtons.

53. The method of claim 48, further comprising (c) impregnating the substrate of (b) with a second thermosetting resin composition comprising a second uncured thermosetting resin and a low profile additive, and
(d) drying the impregnated substrate of (c).

54. Synthetic resin film for laminates produced by the method according to claim 48.

55. A method of producing synthetic resin film for laminates, said synthetic resin film comprising a substrate impregnated with a thermosetting resin, said method comprising
(a) impregnating the substrate with a thermosetting resin composition comprising an uncured thermosetting resin and alkali alumino silicate ceramic microspheres; and
(b) drying the impregnated substrate of (a).

56. The method of claim 55, further comprising at least partially curing the uncured thermosetting resin in the impregnated substrate.

57. The method of claim 55, wherein said uncured thermosetting resin is selected from the group consisting of melamine-formaldehyde, urea-formaldehyde, phenol-formaldehyde and mixtures thereof.

58. The method of claim 55, wherein the substrate is paper.

59. The method of claim 55, wherein the alkali alumino silicate ceramic microspheres are present in amounts sufficient to provide said synthetic resin film with a scratch resistance of at least about 2.5 Newtons.

60. The method of claim 55, further comprising (c) impregnating the substrate of (b) with a second thermosetting resin composition comprising a second uncured thermosetting resin and a low profile additive, and
(d) drying the impregnated substrate of (c).

61. Synthetic resin film for laminates produced by the method according to claim 55.